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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/943,237 | 08/29/2001 | Denis H. Endisch | H0001273 (4780) | 9386 |

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EXAMINER

GUERRERO, MARIA F

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2822

DATE MAILED: 02/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/943,237

Applicant(s)

ENDISCH ET AL.

Examiner

Maria Guerrero

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11, 20, 24-26 and 30 is/are pending in the application.
- 4a) Of the above claim(s) 1-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20, 24-26 and 30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

1. This Office Action is in response to the Election and the Amendment filed October 30, 2003.

Claims 12-19, 21-23, 27-29, 31 are canceled.

Claims 1-11, 20, 24-26, and 30 are pending.

Election/Restrictions

Claims 1-11 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 6.

Applicant's election without traverse of group I (claims 20, 24-26, 30) in Paper No. 20 is acknowledged.

Claim Objections

Claim 20 is objected to because of the following informalities: claim 20 recites "wherein the first solvent comprises propyl acetate and wherein the second solvent comprises ethyl lactate; and spin-rinsing the spin-on compound with a solvent mixture, wherein the solvent mixture comprises a first solvent and a second solvent." It is requested to clarify if the first solvent is the same as the solvent mixture. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 20, 26, and 30 are rejected under 35 U.S.C. 103(a) as being obvious over Huang et al. (U.S. 6,485,576) in view of Nakato et al. (U.S. 5,545,512).

Huang et al. teaches spin-depositing a spin-on compound (comprising silicon) on a surface of a substrate and spin-rinsing the spin-on compound with a solvent mixture (Abstract, col. 1, lines 14-16, col. 3, lines 20-45 col. 4, lines 28-50). Huang et al. shows the solvent mixture comprising a first solvent that dissolves the spin-on compound, and the second solvent that is inert to the spin-on compound (col. 4, lines 28-50). Huang et al. teaches the spin-on compound being SOG (silicate) (Abstract, col. 1, lines 14-20).

Huang et al. does not specifically describe the solvents being propyl acetate and ethyl acetate. However, Nakato teaches employing propyl acetate and ethyl acetate as solvents (col. 5, lines 40-50).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to recognize that the use of propyl acetate and ethyl acetate can be incorporated on Huang et al. reference on as taught by Nakato in order to reduce defects (Nakato, col. 5, lines 45-50). The modification is proper because Nakato was cited on Huang et al. reference.

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3. Claims 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. (U.S. 6,485,576) and Nakato et al. (U.S. 5,545,512) as applied to claims 20, 26, and 30 above, and further in view of Kalnitsky et al. (U.S. 56,435,888).

Regarding claims 24-25, the combination of Huang et al. and Nakato et al. does not specifically show the substrate having a trench. However, Kalnitsky et al. shows the substrate having a trench and spin-on deposited into the trench (Fig. 1A-3C, col. 3, lines 58-65, col. 4, lines 1-40).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Huang et al. and Nakato et al. by including the substrate having the trench and spin-on deposited into the trench as taught by Kalnitsky et al. in order to produce interlevel dielectric having high degree of planarization (col. 1, lines 7-15).

Conclusion


4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Endisch (U.S. 6,565,920), Brewer (U.S. 4,732,785), and Cuthbert et al. (U.S. 4,510,176) teach several steps pertinent to applicant's disclosure. Shen et al. (U.S. 5,913,979) teaches the use of ethyl acetate as conventional in the art. Yoshida et al. (U.S. 6,534,595) shows the use of propyl acetate and ethyl acetate as conventional in the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maria Guerrero whose telephone number is 571-272-1837.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 571-272-1852. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to 571-272-2800.


Maria Guerrero
Primary Examiner
January 15, 2004